Before the
FEDERAL COMMUNICATIONS COMMISISON
Washington, DC

WT Docket No. 07-195
And PS Docket No. 04-356

In the Matter of:

Service Rules for Advance Wireless Services
In the 2155-2175 MHz Band

Service rules for Advance Wireless Services
In the 1915-1920 MHz, 1995-2000 MHz
2020-2025 MHz and 2175-2180 MHz Bands

Comments Filed by:

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1. Introduction

I have been involved in the wireless communications industry for more than forty years, during which time I have designed and implemented numerous wireless systems, provided consulting services on many more and have worked in both the commercial and first responder sides of the telecommunications industry. I have also been involved in and associated with personal and mobile computing and the Internet for almost as many years. Over the course of my career, I have written hundreds of thousands of words about the telecommunications industry, products and services, and basically chronicled the birth and growth of first wireless data, and then wireless.

It is clear from reading this Further Notice of Proposed Rulemaking that the FCC does not appear to be taking into account the financial implications of the proposed changes. In short, I believe the plan to combine the 2155-2175 and 2175-2180 bands and to issue a single license for this spectrum would result in either 1) another failed auction or 2) an endeavor that learns, after the fact, that the cost of building and maintaining this network cannot be recovered by either direct subscriber revenue or advertising income.

As will be discussed in this comment filing, it is my belief that while the FCC's goal to provide free broadband Internet access to 95% of the U.S. population is a noble one, it is not practical using this spectrum or any spectrum above 2 GHz. It would make more sense to allocate additional spectrum for this type of national broadband network in the 400-700 MHz portion of the spectrum, perhaps even making use of "white space" spectrum that is also under consideration by the Commission. It is my belief that a network with the conditions suggested by the FCC is neither practical nor feasible.

2. Discussion

I will be addressing the points provided by the Further Notice of Proposed Rulemaking under II. Discussion, Item 3 sequentially:

Combining the two bands, 2155-2175 and 2175-2180, to provide a single band of 25 MHz of spectrum and permitting both downlink and uplink transmission throughout the entire band could limit the technology choices available for the license holder and could pose some interference issues with license holders on adjacent bands.

Adopting a single nationwide license for the 2155-2180 band will, in itself, discourage potential bidders given the build-out requirements. Based on conservative numbers, my calculations show that providing coverage to 95% of the U.S. population (not geography) will require a minimum of 80,000 cell sites to be constructed and operated. Again using conservative cost estimates, the cost of this network build-out will be in the order of $25 Billion, not counting the cost of the license. Further, and perhaps even more onerous to the successful bidder, the monthly operating costs for this network will be in the order of $114 million or $1.27 billion a year. This brings the ten-year cost of the network to $43 billion, give or take a billion or two.

Asking the winning bidder to provide free, two-way broadband Internet services at a downstream data rate of at least 786 Kbps, using up to 25 percent of the licensee's wireless network capacity, and requiring an "always on" network-based filtering mechanism, is laudable. But once again, this will limit the value of the spectrum and thus the number of bidders.

During the ten-year license period, the first five years will see construction of the network in areas of the nation where there are already many competitors, mostly fee based, but providing data speeds of 3 Mbps for less than $40 per month. Two things are certain for these existing networks: 1) The data speeds will continue to increase and 2) the price per month will continue to decline due to normal market-driven competition. In reality, at the half-way point of the first license period, the data speed required by the Commission will be on a par with today's dial-up Internet access services when compared to DSL, cable or the wireless broadband networks already deployed.

It is doubtful that those who are paying for broadband services (wired or wireless) will give them up for a free service at reduced data rates. And people who cannot afford Internet connectivity today may, in fact, find a way to purchase a device and become part of the Internet population, but due to their economic status, these people will not be prime candidates for advertising-based services that would pay for the network.

Nor do I see provisions or requirements for the winning bidder to provide at least level-one technical support to those who want to take advantage of the free service. It has been proven that once a service is established—even a free service—the customers demand access on a regular, dependable basis. If it is not always available, customers become upset and angry even with a free service. Further, I believe most customers will be people who cannot afford to pay for Internet access (at least during the first five years of the license period) and due to their lack of experience, most of them will require access to some form of technical support services.

By including the open access requirement for this band, the FCC is once again limiting the value of this spectrum. If the network operator is required to provide open access, which is, again, a noble goal, it will also serve to limit the operator's income from additional services that could help defray some of the costs of the network.

If, indeed, the network is to be an "open" network, the only potential revenue streams for the licensee are a monthly fee for service faster than the required free 786 Kbps and any fees it can collect through providing advertising opportunities across the network.

The license term of ten years with renewal terms of ten years, while standard, places an additional burden on the licensee with its large investment in both network build-out and operating expenses (see above, an estimated $43 billion over the term of the license). Further, the build-out schedule is the only provision I can find that would protect the Commission, the Federal Government and the citizens using this service if the license holder were to file for bankruptcy partway through the network build-out.

The build-out requirements for the successful bidder have been addressed several times in this response. However, if it the intention of the Commission is to provide wireless broadband access to those who do not have high-speed or broadband Internet access today, then there should be an understanding that there are at least two groups of citizens who fall into this category. The first are those who are unable to pay for existing wired or wireless broadband services, and the second are those who have no wired or wireless broadband service available and are using either dial-up or two-way satellite services and paying a substantial fee for doing so.

These two groups are distinct and must be addressed differently. Many of those who are not able to pay for Internet services today are in urban settings and have access to other broadband choices. These individuals and families deserve access to the Internet and the concept of this network would provide this access. However, their demographic would not be appealing to most companies that would pay advertising fees to reach potential customers.

The second group is made up of people who want and would pay for broadband access, but live in rural America where these services have not been deployed. This group is spread out over a large geographical area, with few residents per square mile. The spectrum being proposed for this nationwide network (2155-2180) is not conducive to providing broadband services in rural areas because of the physical limitations of distance that the signals will travel. One better solution, which I suggested in my comments for the D block (http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=652001262) would be to use the D block not only for first responders, but also for providing broadband to homes, businesses and mobile devices in rural America. There is no guarantee that even then there would be a return for the investment a company would have to make in network build-out and operations,

but the number of cell sites would be greatly reduced, and the coverage per cell site dramatically increased.

If a national plan were put in place employing incumbent networks in areas already covered and starting the 700-MHz network build in rural America, the goal of providing broadband to 95% of the U.S. population could be realized at a lower cost per person, and in a shorter timeframe.

Permitting the license holder to disaggregate, partition and lease the spectrum could be helpful in minimizing the direct costs to the licensee, but then there would be other costs associated with the disaggregation, partitioning and leasing. It is not clear whether this provision will add any value for the bidders for this spectrum.

The requirements for both mobile and fixed out-of-band emissions are in line with typical FCC requirements but there may still be interference issues with license holders in adjacent bands.

The power levels suggested by the FCC, 1640 watts peak EIRP in non-rural areas and 3280 watts in rural areas, could cause both interference and network operation issues. The best designed networks are those in which the mobile device and the base transmitters and receivers are well matched. That is, if a mobile device can “hear” a base station, the mobile device should be able to communicate with the base station. This may not be an issue for fixed devices, which are located in homes and offices and connected to AC power, but it could be a problem for lower powered mobile devices that operate solely on battery power.

AWS-3 Band Conclusions

It appears to me as though the Commission may not be aware of the financial implications of the requirements it wants to place on this band, including the cost to build out a network at 2100 MHz to cover 95% of the U.S. population. The commission, the Federal Government and the citizens of this nation will not be well served by this proposal. I, for one, believe that even if there is a bidder, which is doubtful, the system will most likely run into both technology and financial problems before the licensee is more than a few years into the program.

I urge the Commission to rethink this rulemaking, removing all of the requirements set forth and putting it out to bid by region (MTA or BTU). This type of auction might encourage bidders that may have the resources to build a broadband wireless network on a regional basis but not to compete for a single license or meet the coverage requirements proposed in this ruling.

I also urge the Commission to work toward resolving the lack of broadband access in rural America by one of two methods: 1) Add provisions to the 700-MHz D block re-auction to include requirements for coverage in rural America, or 2) license and auction the “white space” spectrum on a region-by-region basis for use by companies that want to provide broadband coverage, but require them to build out to 95% coverage of the population in each of the regions.

The companies asking the Commission to approve a nationwide, single network for the 2155-2180 MHz band have, to my knowledge, never built and maintained a wireless network and may not understand the true economics of a nationwide network in this band. Today, in the United States as well as in most of the world, there are many companies that realize wireless broadband is important but have little or no experience with radio coverage, design and operation. It behooves the Commission to make sure that if this spectrum is put up to bid, actual bidders show up at the auction, and that the spectrum is sold to a well qualified bidder that understands both the technical and financial challenges it will face as it moves forward into the construction phase of the project.

Articles by the author of this comment that deal directly with the issues discussed above may be found at the following locations:

1) *Fierce Wireless*, July 10, 2008, www.fiercewireless.com/story/andrew-seybold-new-wireless-opportunity/2008-07-10

2) TELL IT LIKE IT IS, Blog posting, June 03, 2008, www.andrewseybold.com/blog.asp?ID=179

Respectfully submitted July 14, 2008,

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